

CLAIMS

What is claimed is:

- 1 1. A planting assembly comprising:
2 a frame, a furrow opening mechanism, a seed tube for directing a seed into a
3 furrow, a liquid source, a liquid delivery conduit having a delivery end, and a furrow
4 closing mechanism;
5 an adapter configured for mounting to the seed tube;
6 a spray arm including a proximal end configured for mounting to the adapter, a
7 central portion, and a distal end, the central portion extending rearward such that the
8 distal end is disposed above the furrow; and
9 wherein the liquid delivery conduit is in fluid communication with the liquid
10 source and the delivery end is adjacent to the distal end.
- 1 2. The planting assembly of claim 1, wherein the spray arm is configured
2 such that the liquid is dispensed from the delivery end downwardly and forwardly
3 toward the furrow aft of the seed tube.
- 1 3. The planting assembly of claim 1, further comprising a spray nozzle
2 disposed on the distal end of the spray arm in fluid communication with the delivery
3 end.
- 1 4. The planting assembly of claim 1, wherein the spray arm further
2 comprises a deflector shield disposed on the central portion and extending
3 downwardly toward the furrow.

1 5. The planting assembly of claim 1, wherein the spray arm is configured
2 such that the liquid is dispensed from the delivery end substantially downwardly.

1 6. The planting assembly of claim 1, further comprising:
2 a seed positioning device for positioning the seed within the furrow;
3 a bracket configured for mounting the seed positioning device to the frame, the
4 bracket being mounted to the frame and the seed positioning device being mounted to
5 the bracket; and

6 wherein the proximal end of the spray arm is further configured for
7 mounting to the bracket.

1 7. The planting assembly of claim 6, wherein the spray arm is configured
2 such that the liquid is dispensed downwardly and forwardly into the furrow aft of the
3 seed positioning device.

1 8. The planting assembly of claim 1, wherein the liquid is selected from a
2 group consisting of insecticides, herbicides, fungicides, nematicides, fertilizers,
3 starters, inoculants, micronutrients, trace minerals, and water.

1 9. The planting assembly of claim 1, further comprising:
2 a seed positioning device for positioning the seed within the furrow, the seed
3 positioning device being mounted to the seed tube; and
4 wherein the adapter is further configured for mounting to the seed
5 positioning device.

1 10. A method of application of a liquid to a furrow with a planting
2 assembly having a frame, a furrow opening mechanism, a seed tube for directing a
3 seed into the furrow, a liquid source, a liquid delivery conduit having a delivery end, a
4 seed positioning device attached to the frame with a bracket, and a furrow closing
5 mechanism, comprising the steps of:

6 providing a spray arm including a proximal end configured for mounting to
7 the bracket;

8 forming the furrow with the planting assembly;

9 directing the liquid downwardly into at least a portion of the furrow aft of the
10 seed tube, thereby applying the liquid to the seed and the furrow; and

11 closing the furrow over the seed.

1 11. The method of application of claim 10, wherein the directing step
2 further comprises directing the liquid forwardly into the furrow aft of the seed tube.

1 12. The method of claim 10, further comprising the step of positioning the
2 seed in the furrow prior to applying the liquid.

1 13. The method of claim 10, wherein the liquid is selected from the group
2 consisting of insecticides, herbicides, fungicides, nematocides, fertilizers, starters,
3 inoculants, micronutrients, trace minerals, and water.

1 14. A planting assembly comprising:

2 a frame, a seed guide, a furrow opening mechanism, a seed tube for directing a
3 seed into a furrow, a liquid source, a liquid delivery conduit having a delivery end, a
4 seed positioning device connected to the frame with a bracket, and a furrow closing
5 mechanism;

6 a spray arm including a proximal end configured for mounting to the bracket, a
7 central portion, and a distal end, the proximal end being mounted to the bracket and
8 the central portion extending rearward such that the distal end is disposed above the
9 furrow; and

10 wherein the liquid delivery conduit is in fluid communication with the liquid
11 source and the delivery end is adjacent to the distal end.

1 15. The planting assembly of claim 14, wherein the spray arm is
2 configured such that the liquid is dispensed from the delivery end downwardly toward
3 the furrow aft of the seed tube.

1 16. The planting assembly of claim 15, wherein the spray arm is further
2 configured such that the liquid is dispensed from the delivery end forwardly toward
3 the furrow aft of the seed tube.

1 17. The planting assembly of claim 14, further comprising a spray nozzle
2 disposed on the distal end of the spray arm in fluid communication with the delivery
3 end.

1 18. The planting assembly of claim 14, wherein the spray arm is
2 configured such that the liquid is dispensed from the delivery end substantially
3 downwardly.

1 19. A planting assembly comprising:
2 a frame, a seed guide, a seed tube for directing seeds into a furrow, a liquid
3 source, and a liquid delivery conduit having a delivery end;
4 a seed positioning device for positioning the seeds within the furrow;
5 means for securing the seed positioning device to the frame;
6 a spray arm including a proximal end and a distal end, the proximal end being
7 adjacent to the means for securing and the distal end being disposed above the furrow;
8 and
9 wherein the liquid delivery conduit is in fluid communication with the liquid
10 source and the delivery end is adjacent to the distal end.

1 20. The planting assembly of claim 19, wherein the spray arm is
2 removably secured to the means for securing.

1 21. A liquid application device for use with a planting assembly having a
2 frame, a furrow opening mechanism, a seed tube for directing a seed into a furrow, a
3 liquid source, a seed positioning device for positioning a seed within a furrow, a
4 bracket for connecting the seed positioning device to the frame, a liquid delivery
5 conduit having a delivery end, and a furrow closing mechanism, the device
6 comprising:

7 a spray arm including a proximal end configured for mounting to the bracket, a
8 central portion, and a distal end, the central portion extending rearward such that the
9 distal end is disposed above the furrow; and

10 wherein the liquid delivery conduit is in fluid communication with the liquid
11 source and the delivery end is adjacent to the distal end.

1 22. The liquid application device of claim 21, further comprising an
2 adapter having a first side configured for mounting to the seed tube and a second side
3 configured to removably receive the proximal end of the spray arm.

1 23. The liquid application device of claim 22, further comprising:

2 a hook portion and an extension defining a locking aperture extending from
3 the second side of the adapter;

4 a locking tab and a J-shaped extension disposed on the proximal end of the
5 spray arm, the J-shaped portion configured to engage the adapter and the locking tab
6 configured to removably engage the locking aperture; and

7 wherein the J-shaped portion is received within the hook portion and the
8 locking tab is removably received within the locking aperture, thereby removably
9 securing the spray arm to the adapter.

1 24. A liquid application device for use with a planting assembly having a
2 frame, a furrow opening mechanism, a seed tube for directing a seed into a furrow, a
3 liquid source, a liquid delivery conduit having a delivery end, and a furrow closing
4 mechanism, the device comprising:

5 a spray arm including a proximal end configured for mounting to the planting
6 assembly, a central portion, and a distal end, the central portion extending rearward
7 such that the distal end is disposed above the furrow;

8 a spray head configured to be telescopically received on the distal end of the
9 spray arm; and

10 wherein the liquid delivery conduit is in fluid communication with the liquid
11 source and the delivery end is adjacent to the distal end.

1 25. The liquid application device of claim 24, further comprising:

2 a plurality of projections disposed on opposing sides of the distal end of the
3 spray head; and

4 a plurality of slots formed in the spray head, the plurality of slots being
5 configured to receive at least one of the plurality of projections, so that the spray head
6 is removably secured to the spray arm.

1 26. The liquid application device of claim 24, wherein the distal end of the
2 spray arm is threadably secured to the spray head.

1 27. The liquid application device of claim 24, further comprising:
2 a plurality of apertures formed in the distal end of the spray arm;
3 at least a pair of corresponding apertures formed in the spray head, the pair of
4 corresponding apertures spaced such that each of the pair of corresponding apertures
5 aligns with a respective aperture on the spray arm simultaneously; and
6 securing means configured to pass through the aligned apertures and
7 corresponding apertures, thereby removably securing the spray head to the spray arm.

1 28. A liquid application device for use with a planting assembly having a
2 frame including a mounting hole, a furrow opening mechanism, a seed tube for
3 directing a seed into a furrow, a liquid source, a liquid delivery conduit have a
4 delivery end, and a furrow closing mechanism, the device comprising:

5 a spray plug including a proximal end configured for urging through the
6 mounting hole, a distal end, a central portion disposed therebetween and including a
7 fluid passage in fluid communication with the distal and proximal ends; and

8 wherein the liquid delivery conduit is in fluid communication with the liquid
9 source and the delivery end is in fluid communication with the proximal end.

1 29. The liquid application device of claim 28, further comprising a lip
2 disposed on the proximal end of the spray plug, the lip being configured to engage the
3 frame after being urged through the mounting hole, thereby securing the spray plug in
4 the frame.

1 30. The liquid application device of claim 29, further comprising a
2 plurality of fingers disposed on the distal end of the spray head, the fingers being
3 configured to engage the frame, thereby preventing rotation of the spray plug in the
4 mounting hole.

1 31. The liquid application device of claim 29, further comprising a
2 plurality of mounting tabs disposed around the periphery of the spray plug, each
3 mounting tab including a portion of the lip and being configured to be urged inwardly
4 toward a longitudinal axis of the spray plug.